REMARKS/ARGUMENTS

The claims are 1 and 3-8. Claims 1 and 4-8 have been amended to improve their form or to better define the invention. Claim 1 has also been amended to include the subject matter of claim 2. Claim 2 has been canceled. Support for the claims, may be found, *inter alia*, in the disclosure at pages 1-3 and the drawings. Reconsideration is respectfully requested.

Claims 1 and 4-8 were provisionally rejected on the grounds of non-statutory obviousness-type double patenting as being unpatentable over claims 1, 4, 5 and 7-10 of co-pending Application Serial No. 10/583,572 in view of *Tagamolila U.S. Patent No. 5,043,500*. Essentially the Examiner's position was that claims 1 and 4-8 were not patentably distinct from claims 1, 4, 5 and 7-10 of the '572 application, because the '572 application was said to disclose all the limitations of the claims, except mainly radial flow of the gas mixture through a catalyzer packing, which was said to be shown by *Tagamolila*.

This rejection is respectfully traversed.

Claim 1 has been amended to include the subject matter of claim 2, which has been canceled. Claim 2 was not rejected on the grounds of non-statutory obviousness-type double patenting. Therefore, it is respectfully submitted that claim 1 as amended, containing the subject matter of canceled claim 2, is patentable over claims 1, 4, 5, and 7-10 of copending Application No. 10/583572 in view of *Tagamolila*. It is therefore also respectfully submitted that claim 4 as amended, which depends on claim 1, is patentable over claims 1, 4, 5, and 7-10 of copending Application No. 10/583572 in view of *Tagamolila*.

As set forth in Claim 5 as amended, Applicant's invention provides a device for nozzle-jetting of oxygen into a synthesis reactor for oxi-dehydration with mainly radial flow of the gas mixture to a catalyzer packing, particularly for conducting a method as claimed in claim 1, wherein there is a ring distributor with several pipes with exit openings. The several pipes together form an inner cylindrical plane before the cylindrical inner surface of the catalyzer bed. The exit openings are aligned to release the oxygen on to the cylindrical catalyzer surface at an angle to the vertical.

A double patenting rejection must rely on a comparison with the claims in an issued patent or patent application, not on a comparison with what is disclosed (whether or not claimed) in that patent or patent application. M.P.E.P. 804 III.

It is respectfully submitted that the Examiner's hypothetical combination of the device of claims 1, 4, 5 and 7-10 of the *Kowoll et al. '572* application and the device of *Tagamolila* fails to produce a device having the features of claim 5 as amended, including several pipes of the ring distributor together forming an inner cylindrical plane before the cylindrical inner surface of the catalyzer bed. The several pipes of the ring distributor claimed in the *Kowoll et al. '572* application do not together form an inner cylindrical plane before the cylindrical inner surface of the catalyzer bed. Rather, the pipes of the ring distributor claimed in the *Kowoll et al. '572* application are arranged above the catalyst bed and jet oxygen axially to the catalyzer bed, and the pipes can be concentric to each other or co-axial to each other. The catalyzer bed of claims of the *Kowoll et al. '572* application also does not have a cylindrical inner surface after the pipes of the ring distributor, but rather receives jetted oxygen from

the pipes from above.

In any event, the specification of the *Kowoll et al. '572* application also fails to disclose the features of Applicant's device as recited in claim 5, as amended. Instead of disclosing several pipes of the ring distributor together forming an inner cylindrical plane before the inner cylindrical surface of the catalyzer bed, the *Kowoll et al. '572* specification discloses pipes that form an oval plane with their sides that do not face the catalyzer bed that face the sides of the reactor. The ends of the pipes facing the catalyzer bed form a flat, non-cylindrical, plane.

Additionally, the radial flow of the device of *Tagamolila* does not occur through **several pipes** of a ring distributor **together** forming an inner cylindrical plane before an inner cylindrical packing of the catalyzer bed. Rather, only a **single** pipe (62 or 91) is used for each separate line (54 or 92, respectively) to form a plane before the catalyer bed (66 or 102, respectively) for dehydrogenation.

In addition, as explained in Applicant's May 18, 2009 Response, independent claims 1 and 5 and dependent claims 4 and 7-10 of the co-pending *Kowoll et al. '572* application are directed to a method for nozzle jetting of oxygen into a synthesis reactor for oxy-dehydration, for largely **axial** flow of the gas mixture through a catalyst bed and a device for conducting that method. It is respectfully submitted that a radial reactor, as is disclosed and claimed in the *Kowoll et al. '572* application, is much different than an axial reactor, with a different setup and a different mode of operation.

It is respectfully submitted that one skilled in the art would have no reason to combine the secondary reference to *Tagamolila,* in which a mixture streams radially through two different kinds of catalyzers, into the axial reactor to which the *Kowoll et al. '572* claims are directed.

Although the Examiner indicated that Applicant's disclosure does not state that a radial reactor is completely different from an axial reactor or that a radial reactor is much cheaper than an axial reactor, there is no requirement that Applicant do so. In re Chu, 36 U.S.P.Q.2d 1089, 1094 (Fed. Cir. 1995). Thus, it is

respectfully submitted that the Examiner has failed to provide any reason why one skilled in the art would have made the hypothetical combination of the *Kowoll et al. '572* application claims and *Tagamolila* given these differences.

In addition, claim 5 is directed to a device particularly for conducting a method as claimed in claim 1 as amended, and it is respectfully submitted that claim 5 is patentable over the combination of the *Kowoll et al. '572* application claims and *Tagamolila* for the reasons applicable to claim 1 as amended.

For all these reasons, it is respectfully submitted that claim 5 and claims 6-8, which depend on claim 5, are patentable over the combination of claims 1, 4, 5 and 7-10 of the *Kowoll et al. '572* application and *Tagamolila*.

Accordingly, it is respectfully submitted that the provisional double patenting rejection of claims 1 and 4-8 should be withdrawn.

Claims 1-4 were rejected under 35 U.S.C. 103(a) as being

unpatentable over *Tagamolila* in view of *Mendelsohn et al. U.S. Patent No. 3,855,330*, *Smith et al. U.S. Patent No. 4,223,843*, and *Skraba U.S. Patent No. 4,994,239*. The remaining claims 5-8 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Tagamolila*, *Mendelsohn et al.*, *Smith et al.*, and *Skraba* in further view of *Bahnisch EP 0 364 664*.

This rejection is respectfully traversed.

As set forth in claim 1 as amended, Applicant's invention provides a method for nozzle jetting of oxygen into a synthesis reactor for oxi-dehydration, with mainly radial flow of the gas mixture through a catalyzer packing. In accordance with the method, oxygen is added to a ring distributor system in pure form, as air or mixed with inert gas or water vapor, and is then jetted from the ring distributor system directly to the catalyzer surface at an angle to the vertical through several exit openings in the ring distributor system. The oxygen and the gas mixture first begin mixing immediately preceding entry to the catalyzer packing, after the oxygen is jetted from the ring distributor system. The nozzle jetting of the oxygen is carried out from the cylindrical plane in the interior of the catalyzer bed in the

direction towards the reactor wall. In this way, Applicant's invention provides a method that improves the entry and mixing of oxygen before entering into the catalyzer.

The primary reference to *Tagamolila* fails to disclose or suggest a method for nozzle jetting of oxygen into a synthesis reactor having the features of claim 1 as amended, including first mixing oxygen and the gas mixture immediately preceding entry to the catalyzer packing after the oxygen is jetted from the ring distributor system. In contrast to Applicant's method as recited in claim 1 as amended, *Tagamolila's* system flushes oxygen into chambers 30 or 74 to meet the gas mixture that is to be oxi-dehydrated, and the oxygen and the gas mixture are then mixed with mixers 60 or 98 before being sent down centerpipes 62 or 91 for distribution to the catalyzer beds. Thus *Tagamolila's* system discloses mixing oxygen and the gas mixture far before entry to the catalyzer packing. This mixing of *Tagamolila* will have a long duration before entry into the catalyzer bed, and therefore does not provide the benefits of proper mixing of oxygen and gas mixture before catalyzation that are provided by Applicant's method, as recited in claim 1 as amended. Furthermore, as the Examiner has recognized, *Tagamolila* fails to disclose the use of a ring distributor system for nozzle jetting

of oxygen into a synthesis reactor.

The defects and deficiencies of the primary reference to *Tagamolila* are nowhere remedied by the secondary references to *Mendelsohn et al.*, *Smith et al.*, and *Skraba*.

Mendelsohn et al. discloses jetting oxygen directly into catalyzer beds B1, B2, and B3, so that no mixing of oxygen and gas mixture takes place **before** entry into the catalyzer packing.

Smith et al. does not disclose or suggest any mixing of gas and oxygen before entry into the catalyzer packing. Rather, *Smith et al.* discloses an air distribution system in which air or an oxygen-containing gas is fed directly into a catalyzer layer in order to burn coke deposits on the catalyzer and to regenerate the catalyzer.

There is no disclosure or suggestion in *Skraba* of mixing oxygen with a gas mixture, and no disclosure or suggestion of mixing oxygen with a gas mixture for oxi-dehydration. *Skraba* relates to a catalyst regeneration system and not to a

synthesis reactor for oxi-dehydration. With the system of *Skraba*, air or an oxygen-containing gas is distributed in a horizontal cross section of the regenerator by means of a branched distributor and is fed directly into a turbulence layer in order to burn coke deposits on the catalyzer and thereby to regenerate the catalyzer.

Thus, it is respectfully submitted that claim 1 as amended, and claims 3 and 4 which depend thereon, are patentable over the prior art references. It is respectfully requested that the Examiner's rejection of claims 1 and 3-4 under 35 U.S.C. 103(a) be withdrawn.

As set forth in claim 5 as amended, Applicant's invention provides a device for nozzle-jetting of oxygen into a synthesis reactor for oxi-dehydration with mainly radial flow of the gas mixture to a catalyzer packing, particularly for conducting a method as claimed in claim 1, wherein there is a ring distributor with several pipes with exit openings. The several pipes together form an inner cylindrical plane before the cylindrical inner surface of the catalyzer bed. The exit openings are aligned to release the oxygen on to the cylindrical catalyzer

surface at an angle to the vertical.

None of the references relied on by the Examiner including the primary reference to *Tagamolila* and the secondary references to *Mendelsohn et al.*, *Smith et al.*, *Skraba* and *Bahnisch*, discloses or suggests a device for nozzle-jetting of oxygen into a synthesis reactor for oxi-dehydration having the features of Applicant's device as recited in claim 5 as amended, including several pipes of a ring distributor together forming an inner cylindrical plane before the cylindrical inner surface of the catalyzer bed. Thus, even if one skilled in the art would make the hypothetical combination of features from these prior art references proposed by the Examiner, one would still not achieve a device for nozzle-jetting of oxygen into a synthesis reactor for oxi-dehydration having the features of Applicant's device as recited in claim 5 as amended.

As explained above, the radial flow of the reactor of *Tagamolila* does not occur through **several pipes** of a ring distributor **together** forming an inner cylindrical plane before an inner cylindrical packing of the catalyzer bed. Rather, only a **single** pipe (62 or 91) is used for a single line (54 or 92,

respectively) to form a plane before the catalyzer bed (66 or 102, respectively).

Mendelsohn et al. fails to disclose or suggest several pipes of a ring distributor together forming an inner cylindrical plane before the cylindrical inner surface of the catalyzer bed. *Mendelsohn et al.* fails to disclose or suggest a ring distributor, and instead discloses jetting oxygen through pipes 9, 10, and 11 to the catalyzer packing in a perpendicular direction to the flow of the gas mixture. The alignment of pipes 9, 10, and 11 and their orientation in relation to the catalyzer beds are not described or shown in detail.

Smith et al. discloses jetting oxygen directly into a catalyzer bed through exit openings in ring 25 and exit openings 19 in housing 16. Housing 16 and ring 25 are in planes that are perpendicular to each other, and housing 16 and ring 25 do not together form a cylindrical plane.

Skraba discloses pipes in a single flat plane, with the pipes having nozzles extended for jetting oxygen, as shown in FIG. 2. In *Skraba*, the pipes do not together form a cylindrical

plane, as the pipes of Applicant's device together form, as recited in claim 5 as amended.

The remaining reference to *Bahnisch* also fails to disclose or suggest several pipes of a ring distributor together forming an inner cylindrical plane before the cylindrical inner surface of the catalyzer bed. *Bahnisch* instead discloses several layers of pipes 10 arranged in parallel in separate flat planes. In *Bahnisch*, the pipes 10 jet cold gas into some portions of the catalyzer bed for mixing with hot reaction gas, in a reactor for undertaking catalytic gas reactions.

Accordingly, it is respectfully submitted that claim 5 as amended, and claims 6-8 which depend thereon, are patentable over the cited references.

In view of the foregoing, it is respectfully requested that the claims be allowed and that this application be passed to issue.

Respectfully submitted,
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